$$P_1 = \{a, b\}, \qquad \mathcal{L}_{p_1} = \{1, 11\}$$
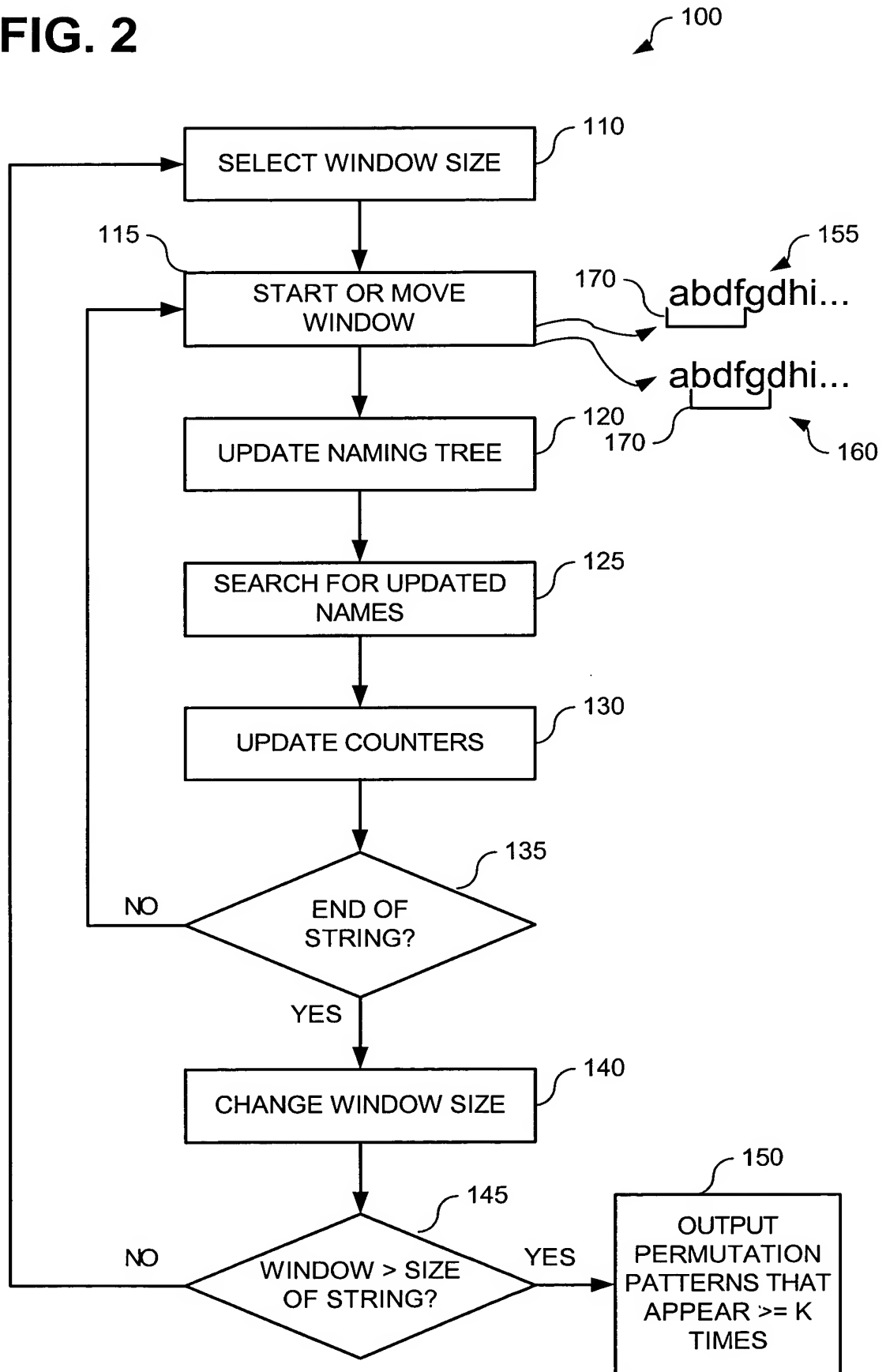$$P_2 = \{a, b, c, d\}, \qquad \mathcal{L}_{p_2} = \{1, 11\}$$
$$P_3 = \{a, b, c, d, e\}, \qquad \mathcal{L}_{p_3} = \{1, 11\}$$
$$P_4 = \{a, b, c, d, e, f\}, \qquad \mathcal{L}_{p_4} = \{1, 11\}$$
$$P_5 = \{a, b, c, d, e, f, g, h\}, \qquad \mathcal{L}_{p_5} = \{1, 11\}$$
$$P_6 = \{a, b, c, d, e, f, g, h, i\}, \qquad \mathcal{L}_{p_6} = \{1, 11\}$$
$$P_7 = \{a, b, c, d, e, f, g, h, i, j\}, \qquad \mathcal{L}_{p_7} = \{1, 11\}$$
$$P_8 = \{b, c, d\}, \qquad \mathcal{L}_{p_8} = \{2, 12\}$$
$$P_9 = \{b, c, d, e, f\}, \qquad \mathcal{L}_{p_9} = \{2, 12\}$$
$$P_{10} = \{b, c, d, e, f, g, h\}, \qquad \mathcal{L}_{p_{10}} = \{2, 12\}$$
$$P_{11} = \{b, c, d, e, f, g, h, i, j\}, \qquad \mathcal{L}_{p_{11}} = \{2, 12\}$$
$$P_{12} = \{c, d\}, \qquad \mathcal{L}_{p_{12}} = \{3, 13\}$$
$$P_{13} = \{c, d, e\}, \qquad \mathcal{L}_{p_{13}} = \{3, 13\}$$
$$P_{14} = \{c, d, e, f\}, \qquad \mathcal{L}_{p_{14}} = \{3, 13\}$$
$$P_{15} = \{c, d, e, f, g, h\}, \qquad \mathcal{L}_{p_{15}} = \{3, 13\}$$
$$P_{16} = \{c, d, e, f, g, h, i\}, \qquad \mathcal{L}_{p_{16}} = \{3, 13\}$$
$$P_{17} = \{c, d, e, f, g, h, i, j\}, \qquad \mathcal{L}_{p_{17}} = \{3, 13\}$$
$$P_{18} = \{e, f\}, \qquad \mathcal{L}_{p_{18}} = \{5, 15\}$$
$$P_{19} = \{e, f, g, h\}, \qquad \mathcal{L}_{p_{19}} = \{5, 15\}$$
$$P_{20} = \{e, f, g, h, i, j\}, \qquad \mathcal{L}_{p_{20}} = \{5, 15\}$$
$$P_{21} = \{f, g, h\}, \qquad \mathcal{L}_{p_{21}} = \{6, 16\}$$
$$P_{22} = \{f, g, h, i, j\}, \qquad \mathcal{L}_{p_{22}} = \{6, 16\}$$
$$P_{23} = \{g, h\}, \qquad \mathcal{L}_{p_{23}} = \{7, 17\}$$
$$P_{24} = \{g, h, i, j\}, \qquad \mathcal{L}_{p_{24}} = \{7, 17\}$$
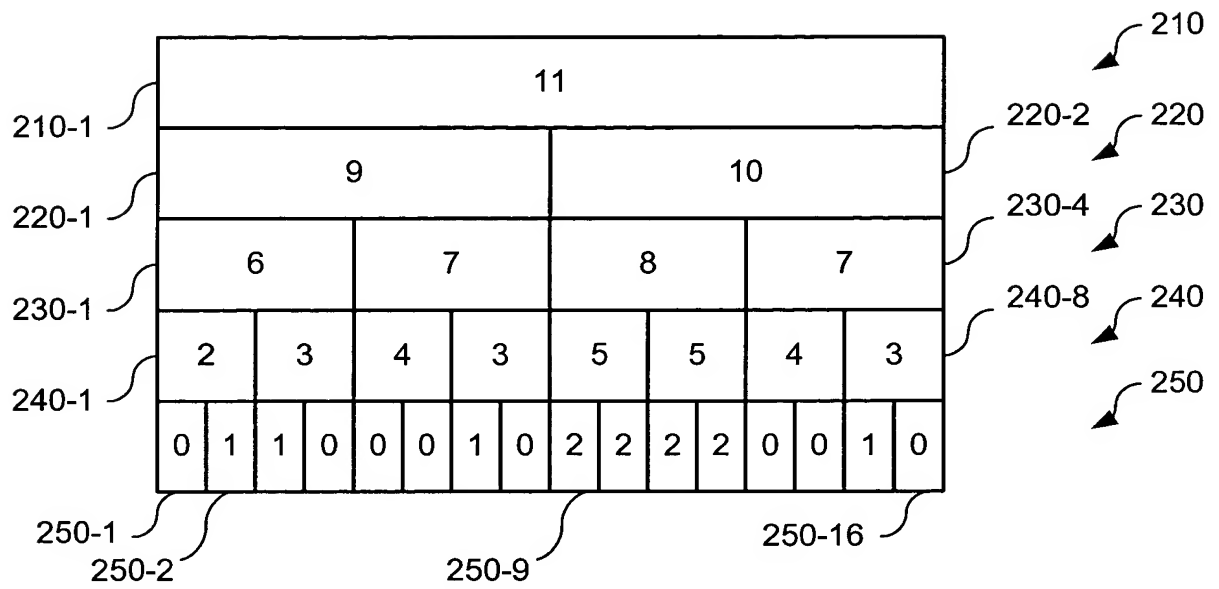$$P_{25} = \{i, j\}, \qquad \mathcal{L}_{p_{25}} = \{9, 19\}$$
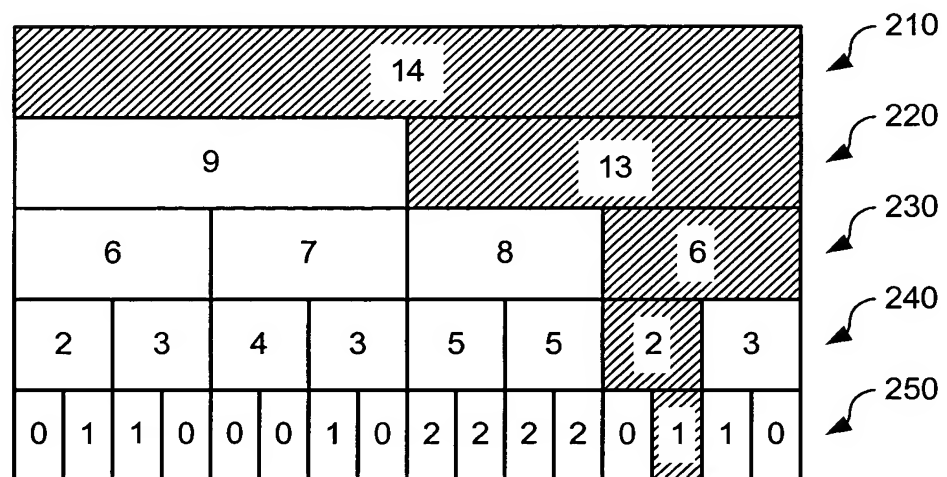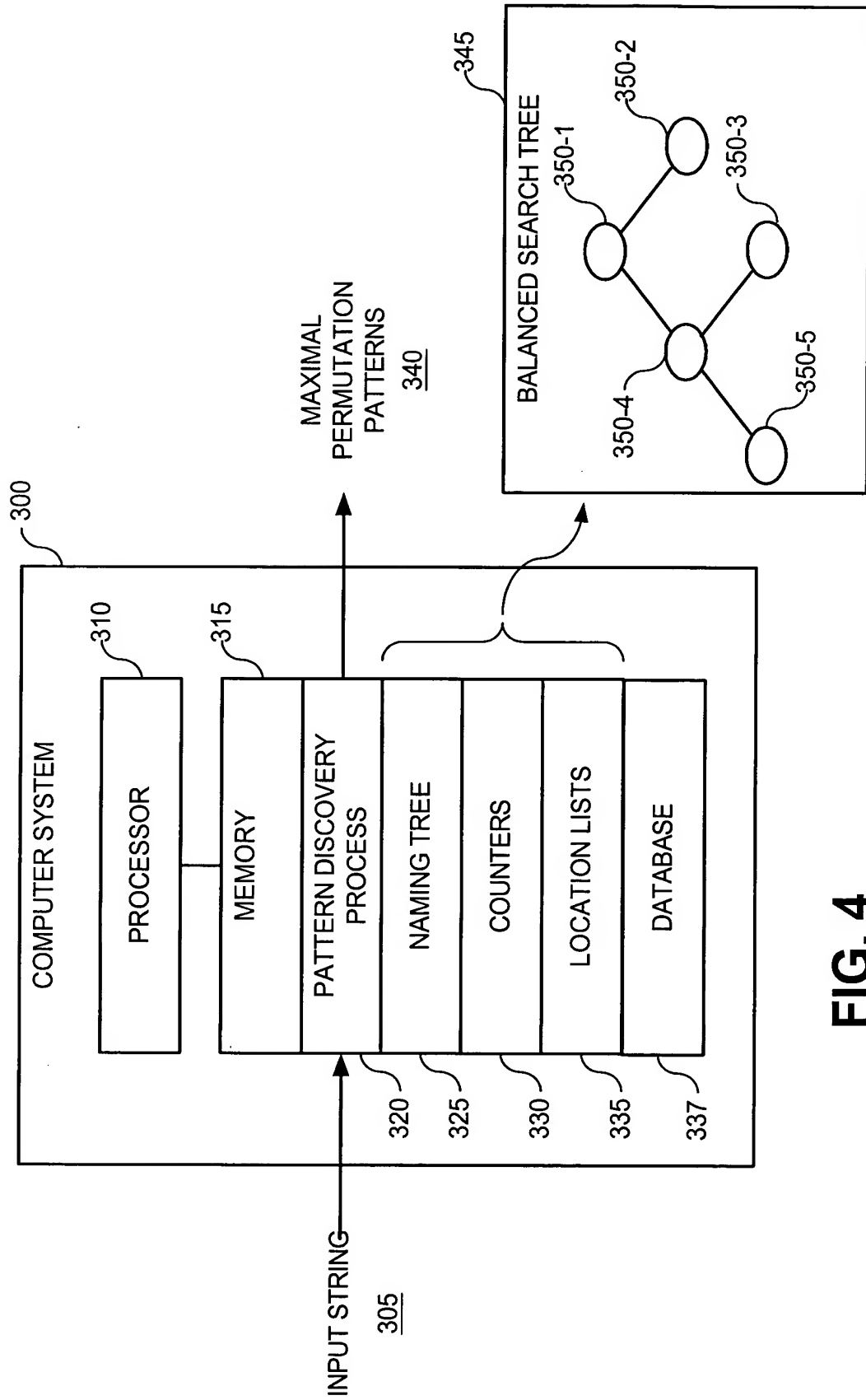
FIG. 1

FIG. 2

100

SELECT WINDOW SIZE — 110

115 — START OR MOVE WINDOW

170 — abdfgdhi... — 155

170 — abdfgdhi... — 160

UPDATE NAMING TREE — 120

SEARCH FOR UPDATED NAMES — 125

UPDATE COUNTERS — 130

135 — END OF STRING?

NO

YES

CHANGE WINDOW SIZE — 140

145 — WINDOW > SIZE OF STRING?

NO

YES

OUTPUT PERMUTATION PATTERNS THAT APPEAR >= K TIMES — 150

FIG. 3A

FIG. 3B

FIG. 4